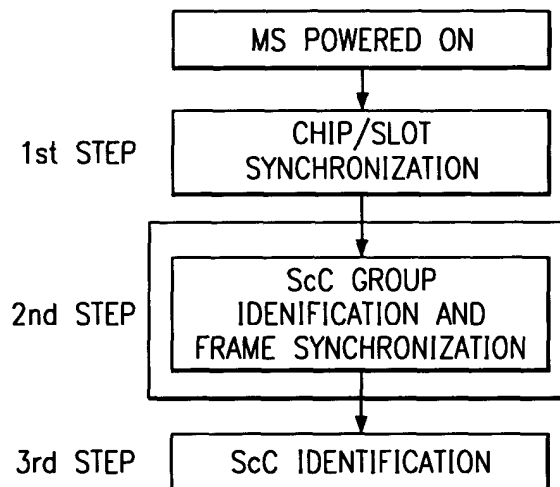FIG. 1
(PRIOR ART)

FIG. 3A
(PRIOR ART)
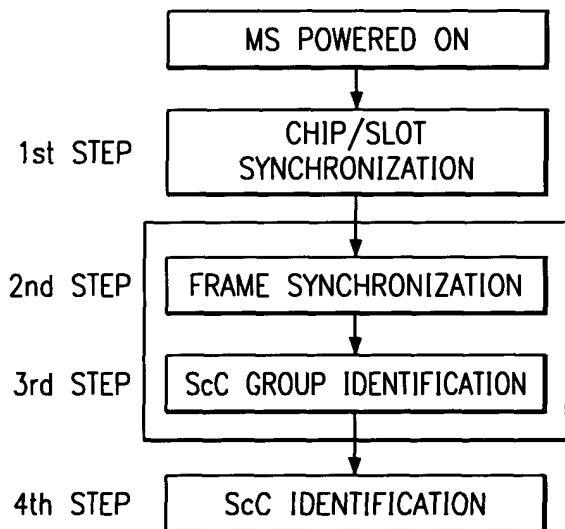

FIG. 3B
(PRIOR ART)
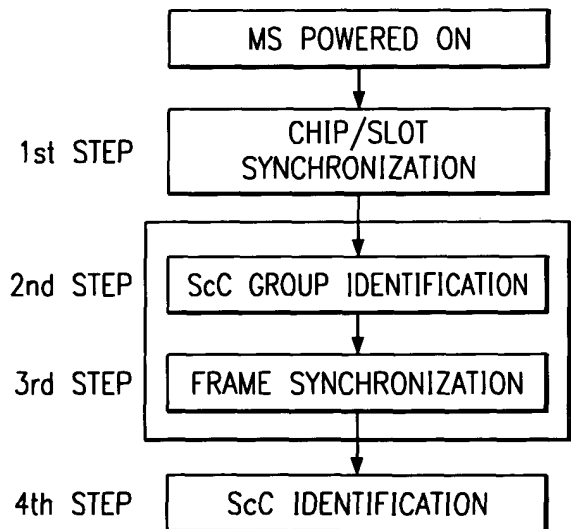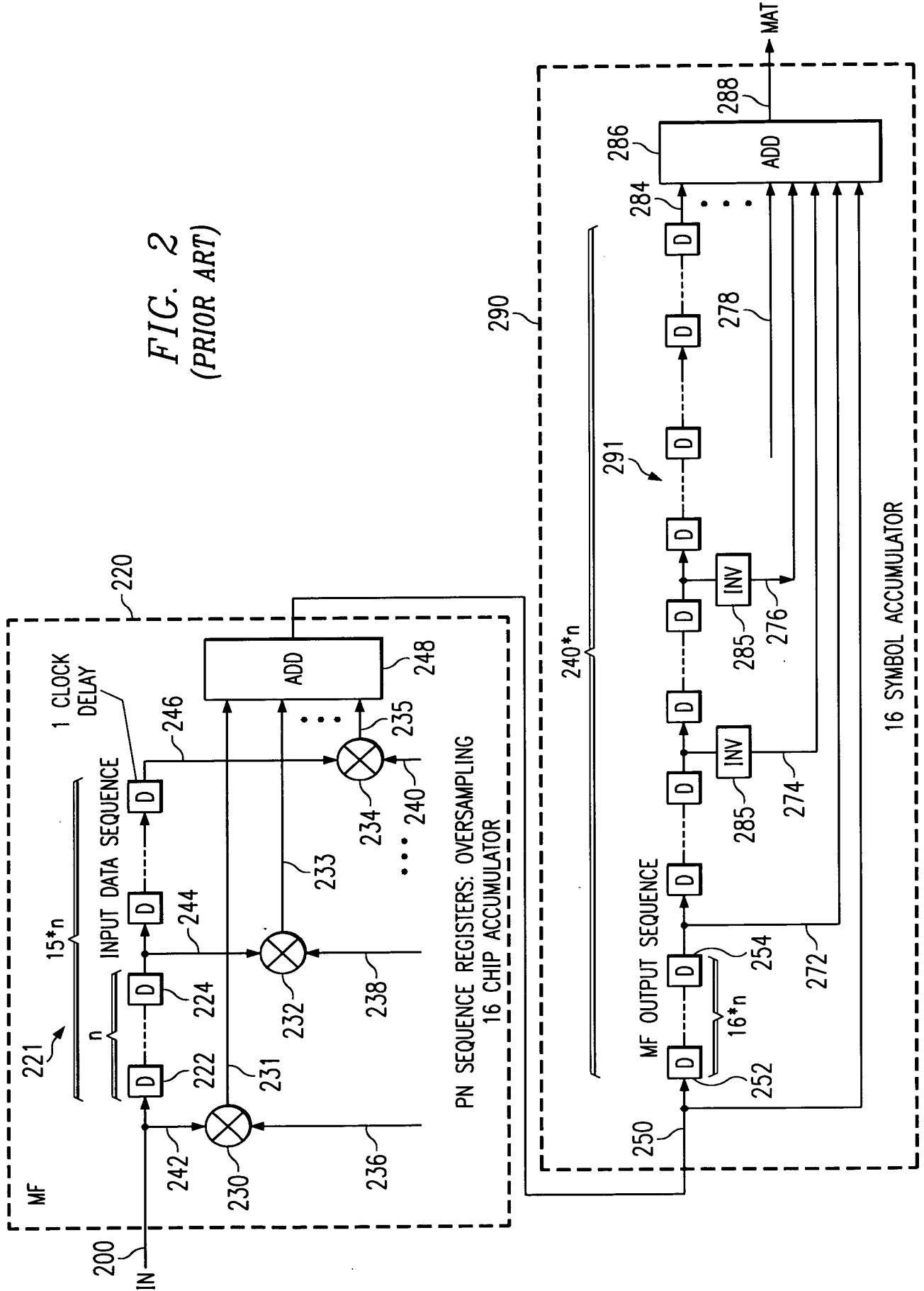

FIG. 3C
(PRIOR ART)

FIG. 2
(PRIOR ART)
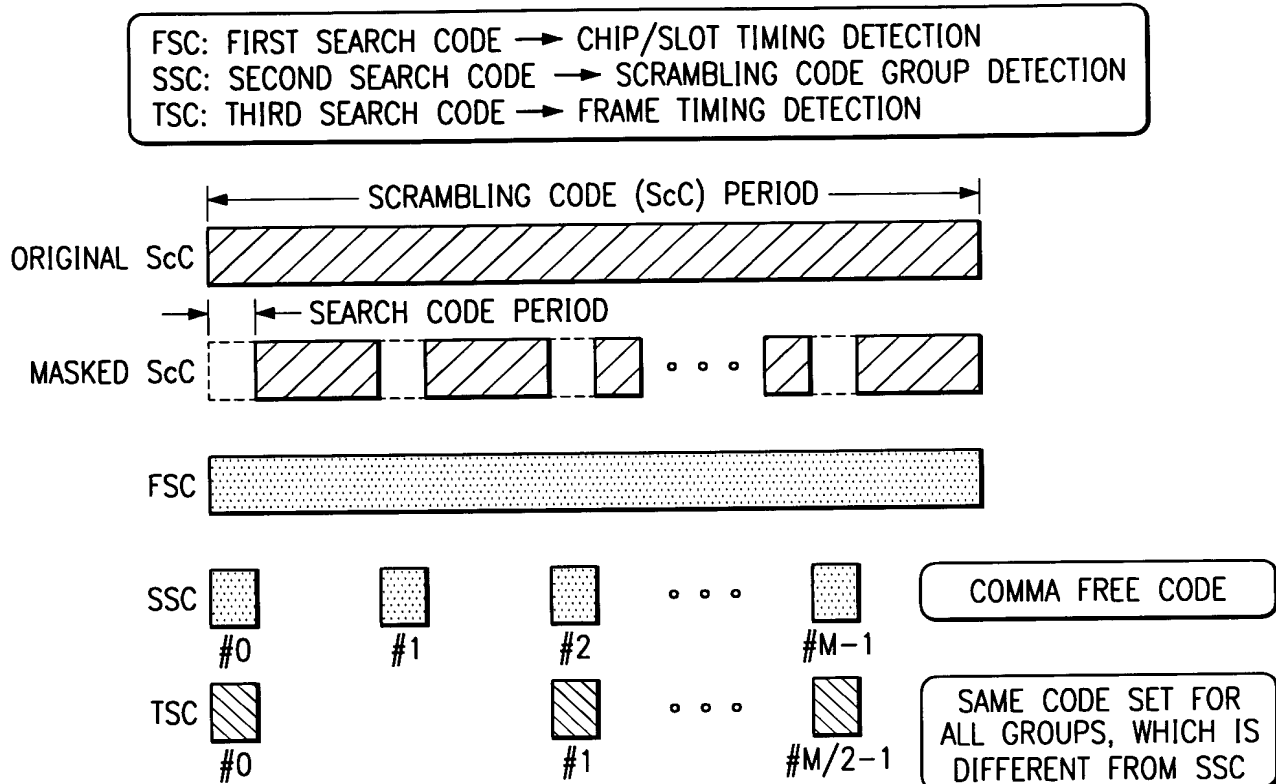
FSC: FIRST SEARCH CODE → CHIP/SLOT TIMING DETECTION
SSC: SECOND SEARCH CODE → SCRAMBLING CODE GROUP DETECTION
TSC: THIRD SEARCH CODE → FRAME TIMING DETECTION

SCRAMBLING CODE (ScC) PERIOD

ORIGINAL ScC

SEARCH CODE PERIOD

MASKED ScC

FSC

SSC #0 #1 #2 . . . #M-1   COMMA FREE CODE

TSC #0 #1 #M/2-1   SAME CODE SET FOR ALL GROUPS, WHICH IS DIFFERENT FROM SSC

FIG. 4
(PRIOR ART)

502
504
506

0.625m

SLOT 1   SLOT 2   . . .   SLOT 16   PRIMARY SYNC CHANNEL

508
FSC
520 514

510 SSC^i_1 SSC^i_2 516   . . . SSC^i_S SECONDARY SYNC CHANNEL

512 TSC^i_1 518 TSC^i_2 . . . TSC^i_S TERTIARY SYNC CHANNEL

(MAY HAVE NO TRANSMISSION)

256 CHIPS

$SSC^i_j \varepsilon \{SC_1, SC_2, ..., SC_{17}\}$

$TSC^i_j \varepsilon \{\phi, SC_{18}, SC_{19}, ..., SC_{34}\}$

FIG. 5

FIG. 6

SEQUENCE ON TSC	SEQUENCE ON SSC	#Gps	#ScC	ScC NUMBERS HANDLED
NOTHING (TSC$_1$=ɸ)	ONE OF 16 CF SEQUENCES	16	256	ScC1 TO ScC256
ONE OF N CF SEQUENCES	ONE OF 64 CF SEQUENCES	Nx64	Nx64x16=Nx1024	ScC257 ONWARDS
TOTAL #ScC			Nx1024+256	

FIG. 7

START SYNCH

↓

CHIP/SLOT SYNCH USING FSC

↓

DETECT PRESENCE OF ANY CYCLIC SHIFT OF ANY ONE OF N SEQUENCES ON TSC

ONE OF N CODE WORDS DETECTED ON TSC →

CODE WORD ON TSC DETERMINES FRAME SYNCH

↓

DETECT ONE OF 64 CODE WORDS TRANSMITTED ON SSC

NO CODE WORD DETECTED ON TSC →

DO FRAME SYNCH AND GROUP IDENTIFICATION USING SSC ALONE

↓

ScC IDENTIFICATION
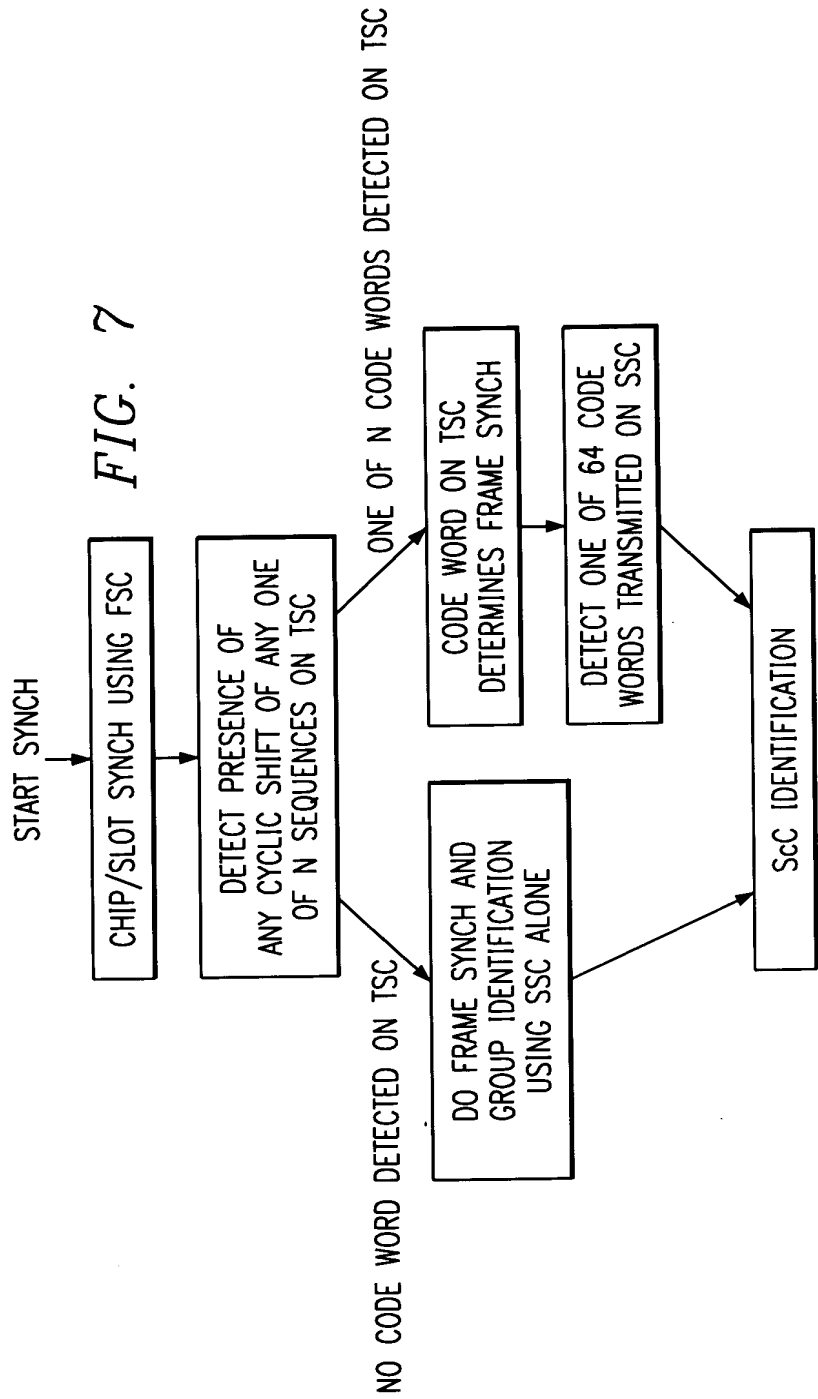
	CORRELATION COMPLEXITY	MATCHING COMPLEXITY (SSC)	MATCHING** COMPLEXITY (TSC)	N=1, #ScC= 256)	N=3, #ScC= 3072*	N=4, #ScC= 4096*
PRIOR ART	6656	16x#Gps+ #Gps	8x16+16	7072 (100%)	10064 (100%)	11152 (100%)
NEW SCHEME FOR FIRST 256 ScC'S (NO TSC PRESENT)	6656+ 1152=7808	16x16x16	Nx8x16+Nx16 (ONLY NEEDED FOR N>1)	11904 (168%)	12336 (123%)	12480 (112%)
NEW SCHEME, WHEN #ScC>256, FOR ScC'S AFTER THE FIRST 256 ScC'S	7808	64x16	Nx8x16+ Nx16	----	9264 (92%)	9408 (84%)

FIG. 8

(SC1 SC2 SC5 SC14 SC7 SC3 SC8 SC6 SC17 SC16 SC13 SC4 SC11 SC15 SC10 SC12)
(SC2 SC3 SC6 SC15 SC8 SC4 SC9 SC7 SC1 SC17 SC14 SC5 SC12 SC16 SC11 SC13)
(SC3 SC4 SC7 SC16 SC9 SC5 SC10 SC8 SC2 SC1 SC15 SC6 SC13 SC17 SC12 SC14)
(SC4 SC5 SC8 SC17 SC10 SC6 SC11 SC9 SC3 SC2 SC16 SC7 SC14 SC1 SC13 SC15)
(SC5 SC6 SC9 SC1 SC11 SC7 S12C SC10 SC4 SC3 SC17 SC8 SC15 SC2 SC14 SC16)
(SC6 SC7 SC10 SC2 SC12 SC8 SC13 SC11 SC5 SC4 SC1 SC9 SC16 SC3 SC15 SC17)
(SC7 SC8 SC11 SC3 SC13 SC9 SC14 SC12 SC6 SC5 SC2 SC10 SC17 SC4 SC16 SC1)
(SC8 SC9 SC12 SC4 SC14 SC10 SC15 SC13 SC7 SC6 SC3 SC11 SC1 SC5 SC17 SC2)
(SC9 SC10 SC13 SC5 SC15 SC11 SC16 SC14 SC8 SC7 SC4 SC12 SC2 SC6 SC1 SC3)
(SC10 SC11 SC14 SC6 SC16 SC12 SC17 SC15 SC9 SC8 SC5 SC13 SC3 SC7 SC2 SC4)
(SC11 SC12 SC15 SC7 SC17 SC13 SC1 SC16 SC10 SC9 SC6 SC14 SC4 SC8 SC3 SC5)
(SC12 SC13 SC16 SC8 SC1 SC14 SC2 SC17 SC11 SC10 SC7 SC15 SC5 SC9 SC4 SC6)
(SC13 SC14 SC17 SC9 SC2 SC15 SC3 SC1 SC12 SC11 SC8 SC16 SC6 SC10 SC5 SC7)
(SC14 SC15 SC1 SC10 SC3 SC16 SC4 SC2 SC13 SC12 SC9 SC17 SC7 SC11 SC6 SC8)
(SC15 SC16 SC2 SC11 SC4 SC17 SC5 SC3 SC14 SC13 SC10 SC1 SC8 SC12 SC7 SC9)
(SC16 SC17 SC3 SC12 SC5 SC1 SC6 SC4 SC15 SC14 SC11 SC2 SC9 SC13 SC8 SC10)

FIG. 9